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Minireview Series: Vacoular ATPases: Structure, Function, Assembly, and Biosynthesis

Series Editor: Patricia M. Kane

Front outside cover: Space filling representation of the quaternary structure of the V ATPase from the tobacco hornworm, Manduca sexta (see Svergnon *et al.*, Biochemistry 37, 17659–17663, 1998 and Wieczorek *et al.*, p. 67). The figure was prepared using MOLSCRIPT (Kraulis *et al.*, J. Appl. Crystallog. 24, 946–950, 1991).

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Front outside cover: The cover figure is a snapshot model depicting the SDS-polyacrylamide gel electrophoresis pattern of yeast ATP synthase. Tricine-SDS-PAGE according to Schägger and Von Jagow (1987). Lanes 1 and 2: 16 and 23 μg protein, respectively. The slab gel was silver-stained. From the article entitled 'Subunit f of the Yeast Mitochondrial ATP Synthase: Topological and Functional Studies,' Roudeau *et al*, pp. 85–94)

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Minireview Series: The Cytochrome bc_1 Complex: Structure and Function

Front outside cover: The cover figure is a ribbon diagram of dimeric bovine heart mitochondrial cytochrome bc_1 complex. The color code for each subunit is: subunit I (light blue), subunit II (orange), cytochrome *b* (light green), cytochrome *c*1 (blue), iron-sulfur protein (yellow), subunit 6 (green), subunit 7 (pink), subunit 8 (red), subunit 9 (gray), subunit 10 (magenta), and subunit 11 (brown). (From the article entitled 'Structural Basis of Multifunctional Bovine Mitochondrial Cytochrome bc_1 Complex,' Yu *et al*, p. 191–199)

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Minireview Series: Role of Mitochondria in Cell Death and Aging

Front outside cover: The figure shows in simplified form some of the proposed differences at the mitochondrial level in the two types of cell death pathways, i.e., those involving necrosis and those involving apoptosis, that are frequently discussed in the literature today. Pathways involving necrosis frequently result from severe cell injury such as that following a stroke, heart attack, or cyanide poisoning. They result in depletion of cell ATP via the action of the F_0F_1 ATP synthase/ATPase complex acting as an active ATPase, and eventually lead to rupture of the plasma membrane. In contrast, pathways involving apoptosis are initiated by a death stimulus, and via signaling pathways frequently solicit a mitochondrial involvement. This results in many cases in the release of cytochrome c and apoptosis inducing factor (AIF), both of which are necessary to complete the cell death program. Here, ATP is required, F_0F_1 is most likely down regulated, and the final events in the pathway involve engulfment by other cells. Significantly, pathways involving apoptosis are known to be involved in a number of biological processes, and are believed to be involved also in aging. Here, reactive oxygen species (ROS) generated by the mitochondrial electron transport chain, and acting on mitochondrial DNA are thought to play a key role. (Figure 3 from the introductory article entitled 'Mitochondrial Events in the Life and Death of Animal Cells: A Brief Overview,' Pedersen, P. L., p. 291–304.)

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Volume 31, Number 5 **October 1999**

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Minireview Series: Mitochondrial Uncoupling: Role of Anion Carriers and Relationship to Thermogenesis and Weight Control
Series Editor: Peter L. Pedersen

Front outside cover: The cover Figure is a model of the mechanism of H^+ transport by UCP1 and the role of fatty acids. A cut through a structural model of UCP1 exposes four transmembrane helices and the hydrophilic loops of the cytosol and matrix side. The H^+ transport path is proposed to consist of a wider (exaggerated) aqueous pore and a narrow path, lined with the matrix sided loops. Nucleotides are visualized to induce closure of this narrow path. Fatty acids are penetrating with their carboxyl groups into the aqueous pore and facilitate H^+ translocation in concert with resident carboxyl and histidine groups. (From the article entitled 'Uncoupling Protein—A Useful Energy Disipator,' Klingenberg, pp. 419–430)

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Front outside cover: Stick Figure Model of The Dimer of the Mitochondrial Citrate Transporter Arranged Clockwise to Form Two 7-Helix Pores. Only α-carbons, polar residues, and charged residues are shown, for clarity. View is from the top (outside) looking down through the CTP into the inner membrane as it projects towards the matrix (inside). Green denotes carbon atoms, white denotes hydrogen, blue denotes nitrogen, red denotes oxygen. A molecule of citrate (to scale; shaded in yellow) and isocitrate (cyan) are placed in each translocation pathway. (From the article entitled 'Oligomeric State of Wild-Type and Cysteine-Less Yeast Mitochondrial Citrate Transport Proteins,' Kotaria *et al.*, pp. 543–549).